

CONTROL UNIT FOR AUTOMOBILE AUDIO SYSTEM

FIELD OF THE INVENTION

The present invention relates to control devices for automobile audio systems. The present invention also relates to audio systems for automobiles which can be controlled by a transmitting device mounted on a shifter used to change gears while operating the automobile.

BACKGROUND OF THE INVENTION

Many attempts have been made towards providing an audio system in which the controls are conveniently arranged with respect to the driver of the automobile. To this end, the prior art has disclosed automobile audio systems and controls at various locations throughout the automobile.

For instance, U.S. Pat. No. 2,452,384 suggests placement of a remote control device in the floorboard of an automobile. U.S. Pat. No. 4,362,907 discloses a radio assembly mounted in an automobile sun visor. U.S. Pat. No. 2,973,431 discloses means for controlling an audio system in an automobile wherein the control unit thereof is arranged in the center of the steering wheel, or on horizontal arms extending from the steering wheel or on an arm arranged for operation by back seat passengers. U.S. Pat. No. 2,133,151 discloses a radio receiving system for an automobile having controls arranged on a vertically extending post between the driver seat and the front passenger seat. U.S. Pat. No. 3,799,483 suggests that it may be convenient to mount an entire radio assembly within the center console of an automobile. Finally, U.S. Pat. No. 4,602,358 discloses a stereo system for an automobile, wherein the controls for the various components of the stereo system are mounted for operation by rear seat passengers.

Each of the aforementioned devices share at least the common shortcoming that the driver of the automobile must move his or her hands to a control unit and take his or her attention from driving in order to look at the controls before actuating the same. Of course, this could cause unsafe conditions because the driver is not concentrating on driving the car, even if only for a moment. The present invention overcomes this shortcoming of the above-described audio systems by providing a control unit for an audio system which is conveniently mounted so that the driver of the automobile need not remove his or her hand from the shifter to operate the audio system. The present invention enables the driver to operate the audio system while concentrating on driving, since he or she will be able to actuate controls with his or her fingers, by knowing where individual controls are, while his or hand is supported on the shifter. Such control is possible while maintaining the hand in the same positions while using the fingers typically used to actuate controls.

SUMMARY AND OBJECTS OF THE INVENTION

One aspect of the present invention pertains to a control unit for an automobile audio system being associated with the shifter. In this aspect of the present invention, transmitting means are provided for transmitting control signals which control the operation of the audio system. The transmitting means are mounted or arranged in correspondence with the automobile shifter, and may include a plurality of actuators which are adapted to be controlled by the driver of the automobile while the operator's hand is supported on the

shifter. The control signals are received by receiving means, which may be mounted in the same assembly as the transmitting means or at a remote location such as the dashboard, the trunk or any other location in the car. At least two of the plurality of actuators are adapted to cause different control signals to be transmitted to the receiving means.

Preferably, the transmitting means is secured to the shifter. In this regard, the transmitting means may be either fixed to the shifter, or releasably secured thereto.

In a further preferred embodiment, the control unit may comprise a housing which is secured to the shifter and includes an opening between the shifter and the actuators. In this embodiment, the driver of the associated automobile can rest his or her fingers in the space between the shifter and that portion of the housing which carries the actuators. This permits the driver to rest his hand on the shifter as he is accustomed to doing when there is no control unit on the shifter. When the driver chooses to operate the audio system, he or she can reach the actuators by merely extending his or her fingers to actuate the actuators which will cause the transmitting means to transmit selected control signals to the associated receiving means. The remaining portion of the driver's hand (i.e., palm or between the palm and the wrist) will be supported on the shifter so that the driver can controllably manipulate his or her fingers to find and actuate the actuators. This is unlike the operation of, for instance, dashboard-mounted controls where there is no support for the driver's hands and it is thus more difficult to manipulate the driver's fingers to find the correct buttons without looking at the controls.

Another aspect of the present invention pertains to an entire audio system for an automobile including a shifter as discussed above. The audio system includes transmitting means mounted in correspondence with the shifter for transmitting control signals. The control signals are received by receiving means also mounted in correspondence with the shifter, which permit control of the audio system to be obtained. The transmitting means may include a plurality of actuators arranged to be activated by the driver of the automobile while one of the driver's hands is supported on the shifter. It is preferable for the plurality of actuators to include at least two actuators, each of which are adapted to cause different control signals to be sent to the receiving means.

The actuators may control a minimum of functions or many different functions and may particularly include controls for the volume (including mute for safety purposes), a CD or cassette, an AM/FM selector, specific radio station selection, a lock/unlock control (or controls) which permits the driver to selectively lock-up the actuator controls so that inadvertent actuation will not occur during operation of the automobile (or lock any other actuators, such as those on dashboard-mounted controls to prevent passengers from controlling the system), or any other functions actuators which may be used for controlling an audio system.

The control signals can be of any suitable kind for controlling an electronic device, including infrared signals, electrical signals through hard wiring, etc. The present invention is particularly well-suited for the control of radios, CD, cassette, 8-track or other similar audio systems. However, in another embodiment of the present invention, telephones and other communication systems, or even automated map systems which show street or highway maps, can also be controlled. Thus, for purposes of this application and for ease of discussion, the term "audio system" shall encompass such systems.